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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,346	11/18/2003	Ming Zheng	CL2221USNA	7632
23906 7590 09/13/2007 E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1128 4417 LANCASTER PIKE WILMINGTON, DE 19805			EXAMINER FORMAN, BETTY J	
			ART UNIT 1634	PAPER NUMBER
			NOTIFICATION DATE 09/13/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-Legal.PRC@usa.dupont.com

Office Action Summary

Application No.

10/716,346

Applicant(s)

ZHENG ET AL.

Examiner

BJ Forman

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 27 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-24 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 2 August 2007 in which the previous rejections were traversed.

Applicant's arguments have been thoroughly reviewed and are found persuasive to overcome the previous rejections.

The finality of the previous office action is withdrawn in view of the withdrawn rejections and new grounds for rejection.

Claims 1-20 are withdrawn.

Claims 21-24, 27 are under prosecution.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-24, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buzaneva et al (Mat. Sci. Eng. C, January 2002, 19:41-45) and Yerushalmirozen et al (WO 02/076888, filed 25 March 2002).

Regarding Claim 21, Buzaneva et al disclose a complex comprising unfunctionalized carbon nanotubes and single stranded nucleic acid (i.e. unwrapped double helix) wherein the complex is dispersed in solution prior to droplet deposition (page 42 and Abstract). The solution composition prior to deposition is encompassed by the claimed dispersion.

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Furthermore, the reference defines the "unwrapped double helix" as destroyed hydrogen bonding of the double helix in the presence of NaOH, which is illustrated by the hyperchromatic shift (page 41-42).

Regarding Claim 22, Buzaneva et al disclose the complex wherein the nucleic acid is DNA (Abstract).

Regarding Claim 23, Buzaneva et al disclose the complex wherein the nucleic acid is synthetic and/or isolated from nature (page 42, left column).

Regarding Claim 27, Buzaneva et al disclose the complex wherein the nucleic acid is metalized (i.e. Pt/Ir tip-DNA, page 42, left column).

Buzaneva et al teach the complex is useful for controlled construction of DNA motifs into periodic matter (page 41). Buzaneva et al do not specifically teach a dispersion of DNA-nanotubes. However, Yerushalimirozen teaches dispersed nanotubes in a stable suspension that are useful complexes for controlled construction of materials (Abstract). Yerushalimirozen et al further teach the nanotubes consist of single-walled nanotubes wrapped by charged, hydrophilic polymers e.g. polypeptides (page 5, line 10-page 6, line 8). Yerushalimirozen et al also teaches that the dispersion enables introduction of the nanotubes into any system, in any form and quantity and provides for highly adhesive interfaces between the tube and a polymeric matrix (page 8, lines 4-20).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the nanotube dispersion of Yerushalimirozen et al to the complexes of Buzaneva et al. One of ordinary skill in the art would have been motivated to do so for the expected benefit of enabling introduction of the nanotubes into any system, in any form and quantity and provides for highly adhesive interfaces between the tube and a polymeric matrix (as desired in the art, Yerushalimirozen et al: page 8, lines 4-20).

Alternatively, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the DNA polymers of Buzaneva et al to the polymer

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matrix of wrapped nanotubes of Yerushalmirozen et al. One of ordinary skill in the art would have been motivated to do so for the expected benefit of providing highly structured DNA motifs as desired in the field of DNA nanotechnology (Buzaneva et al, page 41).

Conclusion

4. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

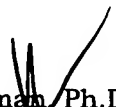
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.


BJ Forman Ph.D.
Primary Examiner
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September 4, 2007